Income Optimization Model for Traditional Woven Craftsmen

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A B S T R A C T

This study aims to analyze and optimize the household income of Palembang woven fabric craftsmen. It employs an optimal response surface regression model to identify the ideal levels of working capital, business experience, partnerships, and working hours that maximize household income. To establish the relationship between the target response and the independent variables, the study uses a second-order central composite design within a quadratic model framework. The research sample consists of craftsmen who are members of the Griya Tuan Kentang joint business group, with data collected through questionnaires. The findings indicate that the optimal working capital is IDR 12,069,541.74. This amount enables craftsmen to manage periods of declining demand and rising raw material costs while minimizing unnecessary expenses and increasing profitability. The study also reveals that 18.2 years of business experience is the optimal duration for achieving superior business performance. This level of experience allows craftsmen to set realistic, long-term business goals. Furthermore, an optimal working schedule of 7.99 hours per day ensures efficient productivity without compromising work quality or work–life balance. Finally, maintaining a partnership for two years is identified as the ideal duration. This period encourages craftsmen to regularly evaluate and enhance the sustainability of their partnerships, effectively optimizing resources and networks.

A B S T R A K

Penelitian ini bertujuan untuk menganalisis dan mengoptimalkan pendapatan rumah tangga para pengrajin kain tenun Palembang. Penelitian ini menggunakan model regresi permukaan respons optimal untuk mengidentifikasi tingkat ideal modal kerja, pengalaman usaha, kemitraan, dan jam kerja yang dapat memaksimalkan pendapatan rumah tangga. Untuk menentukan hubungan antara respons target dan variabel independen, penelitian ini menggunakan desain komposit sentral orde kedua dalam kerangka model kuadratik. Sampel penelitian terdiri dari para pengrajin yang tergabung dalam kelompok usaha bersama Griya Tuan Kentang, dengan data yang dikumpulkan melalui kuesioner. Hasil penelitian menunjukkan bahwa kondisi modal kerja optimal adalah sebesar Rp 12.069.541,74. Jumlah ini memungkinkan para pengrajin untuk menghadapi periode penurunan permintaan dan kenaikan biaya bahan baku, sekaligus meminimalkan pengeluaran yang tidak perlu dan meningkatkan profitabilitas. Penelitian ini juga mengungkapkan bahwa pengalaman usaha selama 18,2 tahun merupakan durasi optimal untuk mencapai kinerja bisnis yang unggul. Tingkat pengalaman ini memungkinkan para pengrajin untuk menetapkan tujuan bisnis yang realistis dan berjangka panjang. Selain itu, jadwal kerja optimal selama 7,99 jam per hari memastikan produktivitas yang efisien tanpa mengorbankan kualitas kerja atau keseimbangan antara pekerjaan dan kehidupan pribadi. Terakhir, mempertahankan kemitraan selama dua tahun diidentifikasi sebagai durasi yang ideal. Periode ini mendorong para pengrajin untuk secara rutin mengevaluasi dan meningkatkan keberlanjutan kemitraan mereka, sehingga dapat mengoptimalkan sumber daya dan jaringan secara efektif.

1. INTRODUCTION

The COVID-19 pandemic, which impacted nearly every nation, significantly disrupted all aspects of life, including the global economy. This disruption led to a decline in purchasing power among the population, primarily due to widespread economic downturns. Certain sectors, such as Palembang's micro, small, and medium enterprises (MSMEs)—particularly traditional woven fabric craftsmen—experienced stagnant or

declining income levels. The reduction in household income, combined with decreased promotional support from relevant agencies, caused a notable decline in the income of artisans compared to the pre-pandemic period (Celik et al., 2020; Janssens et al., 2021; Kansiime et al., 2021; Robbi, 2022).

Studies by Qian et al. (2020), Sina (2020), and Susilawati et al. (2020) indicate that COVID-19 has altered public awareness and social behavior regarding household income utilization, with sociodemographic characteristics playing a significant role in shaping these changes. The pandemic had a particularly severe impact on micro-entrepreneurs operating home-based businesses. These household enterprises rely on small-scale production systems that create added value by producing unique, handmade goods rooted in local wisdom and resources. However, these businesses are often constrained by limited capital, small-scale production, minimal labor, and unprofessional management practices (Suminah et al., 2022).

Palembang's woven fabric entrepreneurs faced significant marketing challenges during the pandemic, prompting them to reduce production and limit supplies to avoid overstocking. Despite these measures, entrepreneurs continued to accept limited quantities of woven fabric from craftsmen, recognizing that these sales were the primary source of income for many artisans. However, public demand for woven fabrics declined, leading to reduced income for craftsmen, including those associated with the Kube Griya Tuan Kentang business group. Interviews with several craftsmen revealed key challenges during the pandemic, including: (1) reduced sales, (2) difficulties in obtaining raw materials, (3) disrupted distribution channels, (4) limited access to capital, and (5) interruptions in production processes. These challenges collectively contributed to a significant decline in craftsmen's income.

Beyond these pandemic-related issues, a craftsman's income is influenced by several key factors, including partnerships, working hours, business experience, and capital. Among these, capital plays a critical role in production, as it directly or indirectly enhances output. Capital is a key determinant of income for micro-entrepreneurs, as it increases production capacity and improves marketing efforts (Radipere & Dhliwayo, 2014). Effective capital management can lead to gradual and sustainable income growth (Lateh et al., 2017). While Ahmad (2015) found that capital significantly affects production, the optimal combination of capital and other production factors for maximum economic efficiency has yet to be fully achieved. Nugroho et al. (2020) also highlighted the influence of capital on merchants' revenue in the Kartasura market, Sukoharjo.

Crafting traditional Palembang woven fabric is often a hereditary occupation, with craftsmen possessing varying levels of business experience, some spanning over 30 years. Business experience is typically measured by the length of time spent in a particular field, with greater experience often correlating with a deeper understanding of consumer behavior and a broader network of relationships and customers (Dewi & Saskara, 2020). Studies by Herman (2020) and Joseph and Likumahua (2019) have demonstrated that business experience positively influences the income and performance of craftsmen. However, Kadim et al. (2017) reported that business experience does not always have a significant impact on income.

Craftsmen in the Griya Tuan Kentang business group typically work between 7 and 9 hours per day. Longer working hours, particularly during the early stages of a business, can increase the likelihood of generating revenue and provide additional income. This finding aligns with Herman's (2021) research, which showed that working hours influence income. However, other studies, such as those by Utami (2022) and Yustie and Retnowati (2020), suggest that longer working hours do not necessarily result in higher earnings for traders.

The success of a partnership depends on mutual benefits, guided by principles of reciprocity, necessity, and collaboration. For the craftsmen in Griya Tuan Kentang, partnerships have facilitated product marketing and increased sales. Tresnati (2014) observed that sweet corn farmers in Ciamis Regency improved their marketing and distribution through partnerships with Kampoeng BNI, leading to higher income. Similar findings were reported by Buchori et al. (2020) and Fachrysa Halik et al. (2020), who noted that partnerships can enhance income and profitability.

Response surface methodology (RSM) is a statistical and mathematical approach used to optimize response conditions influenced by independent variables. For example, Mardiani (2019) used RSM to optimize academic performance by analyzing variables such as assignments and attendance, while Pakem et al. (2019) applied RSM to determine that selling 7,341 bunches of kale yielded optimal profits of IDR 703,000. Conversely, Ascough et al. (2013), in developing an integrated framework for farm-level economic risk analysis, concluded that no single balance exists between environmental effects and agricultural profitability.

RSM is particularly effective in optimizing craftsmen's income by analyzing multiple influencing factors, such as working capital, business experience, partnerships, and working hours. Its strength lies in identifying the best combination of these variables to maximize income, offering a comprehensive analysis that goes beyond simple linear relationships.

This research focuses on traditional woven fabric craftsmen, a sector often marginalized in local economies. By addressing this group, the study provides valuable insights into the challenges and opportunities faced by craftsmen in preserving cultural heritage while improving their income. The research identifies and optimizes practical variables—working capital, business experience, partnership duration, and working hours—that can be directly applied by craftsmen to increase revenue without requiring drastic changes to the production process. Unlike most studies in the MSME or traditional craft sector, which often focus on descriptive analysis or product development, this study employs a quantitative approach to optimization.

The study aims to develop an optimal response surface regression model for craftsmen's income, enabling them to maximize earnings from Palembang woven fabrics by considering key financial and operational factors. Using RSM, the study seeks to calculate the optimal income based on working capital, business experience, partnership duration, and working hours.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

A company's financial stability and its ability to cover operational and other costs are closely linked to its income. Higher income levels can significantly enhance a company's overall sustainability. Shin and Kim (2018) found that families who perceive a decline in their income—particularly when compared to pre-pandemic levels—are less likely to save than those whose income remains stable. Similarly, Liu et al. (2020) demonstrated that higher income levels often encourage businesses to invest in additional production factors, aiming to increase output.

Business capital, which refers to the initial funds allocated for starting and expanding a business, plays a critical role in wealth generation (Renaldo et al., 2021; Vavensy & Handoyo, 2023). Aidoo-Mensah (2018) emphasized the importance of household savings, suggesting that effective policies to mobilize savings can help increase business capital. Capital serves as the foundation for financing operations and sustaining a business, directly influencing income levels (Mazanec, 2022; Prihatminingtyas, 2019; Rani, 2019). Working capital, in particular, provides financial security for businesses, ensuring their ability to operate effectively (Madeira et al., 2021; Zimon & Tarighi, 2021). However, small businesses often face significant challenges in accessing adequate capital. To address this issue, government policies are essential to support the financial viability of small enterprises and ensure their continued operations (Surya et al., 2021). Based on this understanding, the following hypothesis is proposed:

H1. Working capital influences craftsmen's income but reaches a saturation point at an optimal level of capital.

The time invested in work, accumulated experience, and the implementation of effective management strategies all contribute to improved job performance. Among these factors, business experience stands out as a critical determinant for business owners, significantly influencing their income levels (Jati et al., 2021). Individuals with extensive business experience tend to possess enhanced skills (Cahyadinata et al., 2020) and a deeper understanding of the potential outcomes of their decisions, which is essential for business growth and development (Felzensztein et al., 2022; Meressa, 2022). Tian et al. (2022) found that business experience acts as a catalyst for innovation within enterprises. Entrepreneurs with sufficient experience are better equipped to quickly identify and seize emerging opportunities for business expansion. Additionally, they are more adept at utilizing available resources effectively and leveraging their knowledge to enhance business performance (Ceptureanu et al., 2021). Based on this understanding, the hypothesis related to the business experience variable is proposed as follows:

H2. Business experience influences craftsmen's income until it reaches an optimal level.

Partnership activities are mutually beneficial arrangements that involve various forms of cooperation aimed at supporting and enhancing the capabilities of all parties involved (Khan et al., 2022; Ratnawati, 2019). These activities are founded on principles of mutual interest, trust, support, and shared benefits, particularly in the context of MSMEs (Irianto, 2019). Partnerships draw on collective knowledge and experience

in areas such as management and communication, enabling participants to achieve greater outcomes. Efficient and diverse partnerships maximize the use of available resources and facilitate collaborative efforts, leading to improved results (Rosewarne et al., 2021). Effendi et al. (2023) highlighted that partnerships enhance business governance and collaboration, strengthening the capabilities of each party and increasing opportunities to benefit from cooperative initiatives.

Based on this understanding, the following hypothesis is proposed:

H3. Partnerships influence craftsmen's income until it reaches an optimal level.

The number of working hours varies among individuals, but establishing designated working hours is essential for any business (Sundari & Lindayani, 2023). A person's income is closely tied to the amount of time dedicated to work (Liswatin, 2022). Zhang et al. (2023) found that increasing working hours within conventional limits leads to higher income. However, Rani et al. (2022) noted that excessively long working hours can have negative effects on workers' well-being. Based on these insights, the following hypotheses are proposed:

H4. Working hours influence craftsmen's income until it reaches an optimal level.

H5. Working capital, business experience, partnerships, and working hours collectively influence craftsmen's income.

H6. The combination of these variables has a significant impact on craftsmen's income.

3. RESEARCH METHOD

This study aims to optimize the income of craftsmen specializing in traditional Palembang woven fabrics. The research utilizes cross-sectional data, which captures the condition of the sampled population at a specific point in time. Data collection was conducted in October 2021 through questionnaires distributed to 30 traditional Palembang woven fabric craftsmen who are members of the Kube Griya Tuan Kentang.

The study employs both qualitative and quantitative descriptive analyses as its analytical methods. Qualitative descriptive analysis provides an overview of the observed variables, while quantitative analysis is used to determine the optimal values of the independent variables—working capital, business experience, working hours, and partnerships. These variables are analyzed to identify the conditions that generate the highest income for craftsmen using the Response Surface Methodology (RSM).

Although RSM is commonly associated with engineering disciplines such as agriculture, chemistry, biotechnology, health sciences, biology, and pharmacy, it is also applicable to economic research, particularly studies that aim to identify optimal conditions for specific variables (Oramahi, 2016). RSM combines statistical and mathematical techniques to model and analyze a response influenced by multiple independent variables (Montgomery, 2001).

In this study, the response surface design is of second order and utilizes the Central Composite Design (CCD) approach. This design involves levels and coding, as outlined by Myers et al. (2009):

$$Xi1 = \frac{\xi_{i1} - [\max(\xi_{i1}) + \min(\xi_{i1})]/2}{[\max(\xi_{i1}) - \min(\xi_{i1})]/2}. \tag{1}$$

The optimum point of the obtained model can be calculated as

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_{11} X_1^2 + \beta_{22} X_2^2 + \beta_{33} X_3^2 + \beta_{44} X_4^2 + + \beta_{12} X_1 X_2 + \beta_{13} X_1 X_3 + \beta_{14} X_1 X_4 + \beta_{23} X_2 X_3 +$$

$$\beta_{24} X_2 X_4 + \varepsilon \tag{2}$$

where Y denotes craftsmen's income; X_1, X_2, X_3, and X_4 represent the working capital, business experience, partnership, and working hours, respectively; and ε is the error term.

4. DATA ANALYSIS AND DISCUSSION

The impact of COVID-19 has affected businesses of all sizes, including traditional Palembang woven fabric craftsmen. Palembang is renowned for its woven fabrics, which feature distinctive motifs and hold significant market value. These fabrics attract both local and international customers due to their unique characteristics, setting them apart from similar products in other regions.

Many craftsmen have reported a decline in income, primarily due to the pandemic-induced reduction in community purchasing power, which has directly affected their earnings. Despite these challenges,

Table 1. Range factor

Level	Unit	Coded Level		
		-1	0	1
		min	center	max
Working capital	Rupiah	10000000	35000000	60000000
Business experience	Year	3	16.5	30
Partnership	Year	2	3	4
Working hours	Hour/day	6	7	8

Table 2. ANOVA for response surface quadratic model

Source	Sum of Squares	df	Mean Square	F Value	p-value	
Model	1,03E+14	14	7,35E+12	14,96973	< 0.0001	**significant**
A-Working Capital	7,61E+13	1	7,61E+13	155,0042	< 0.0001	
B-Business Experience	6,72E+12	1	6,72E+12	13,70015	0.0021	
C-Partnership	2,35E+12	1	2,35E+12	4,78373	0.0450	
D-Working Hour	3,47E+11	1	3,47E+11	0,707652	0.4134	
Residual	7,36E+12	15	4,91E+11			
Lack of Fit	6,52E+12	10	6,52E+11	3,888865	0.0735	**not significant**
Pure Error	8,38E+11	5	1,68E+11			
Cor Total	1,1E+14	29				

Table 3. Model summary

Std. Dev.	700,476	R-Squared	0.933208
Mean	4,450,167	Adj R-Squared	0.870868
C.V. %	15.74046	Pred R-Squared	0.669944
PRESS	3,64E+13	Adeq Precision	13.32013

the production of woven fabrics remains essential, particularly in the Tuan Kentang area, where many crafts-men rely on this trade as their primary source of livelihood. Griya Tuan Kentang, as a partner to these crafts-men, continues to manage orders for a limited selection of woven fabrics, including Songket, Blongsong, Tajung, Blongket, and Jumputan.

To maximize the income of craftsmen, it is essential to identify the optimal levels of the independent variables: working capital, business experience, partnerships, and working hours. The research data were analyzed, and Equation 1 was used to encode the independent variables.

Table 1 serves as a reference for determining the coded levels of each independent variable, ensuring that all variables are tested within their relevant ranges. The modeling process began with a first-order equation; however, the results indicated that both the model and the lack of fit were significant. This substantial lack of fit suggests that the first-order model is neither valid nor usable. Consequently, the analysis proceeded with a second-order quadratic model using the Central Composite Design (CCD) method. The results of this model are presented in Table 2.

As shown in Table 2, the quadratic model is statistically significant, and the lack of fit is now insignificant. This indicates that the model is appropriate for analyzing the response surface of the craftsmen's income. Additionally, an ANOVA test was conducted to assess the model's significance, yielding an R-squared (R^2) value of 0.870868. This result suggests that working capital, business experience, partnerships, and working hours collectively explain 87.09% of the variance in income. The remaining 12.91% is attributed to factors outside the scope of the studied variables, as detailed in Table 3. The regression equation for the second order is as follows:

$$y = 5{,}250{,}482.456 + 205{,}555.556X_1 + 611{,}111.11X_2 + 361{,}111.11X_3 - 138{,}888.8889X_4 -$$
$$218{,}750X_1X_2 - 343{,}750X_1X_3 + 93{,}750\,X_1X_4 + 343{,}750X_2X_3 - 93{,}750X_3X_4 -$$
$$83{,}464.91228X_1{}^2 + 416{,}535.0877X_2{}^2 - 833{,}464.9123X_3{}^2 - 833{,}464.9123X_4{}^2. \qquad (3)$$

Equation (3) provides a mathematical model that explains the relationship between the independent variables—working capital (X_1), business experience (X_2), partnership (X_3), and working hours (X_4)—and the

dependent variable, craftsmen's income (Y). The linear coefficients of X_1, X_2, X_3, and X_4 have a significant impact on craftsmen's income (Y), with the direction of their influence determined by the signs of the coefficients. A positive coefficient for X_1, X_2, or X_3 indicates that an increase in these variables is associated with a corresponding increase in income (Y). In contrast, the negative coefficient for X_4 suggests that exceeding an optimal level of working hours (X_4) can lead to a decline in income (Y).

Additionally, Equation (3) includes interaction coefficients — X_1X_2, X_1X_3, X_1X_4, X_2X_3, and X_3X_4 — which capture the effects of interactions between these variables on craftsmen's income (Y). Negative interaction coefficients, such as those between working capital (X_1) and business experience (X_2), working capital (X_1) and partnership (X_3), and partnership (X_3) and working hours (X_4), indicate that these interactions reduce craftsmen's income (Y). On the other hand, positive interaction coefficients, such as those between working capital (X_1) and working hours (X_4) and between business experience (X_2) and partnership (X_3), suggest that these interactions contribute to an increase in income (Y).
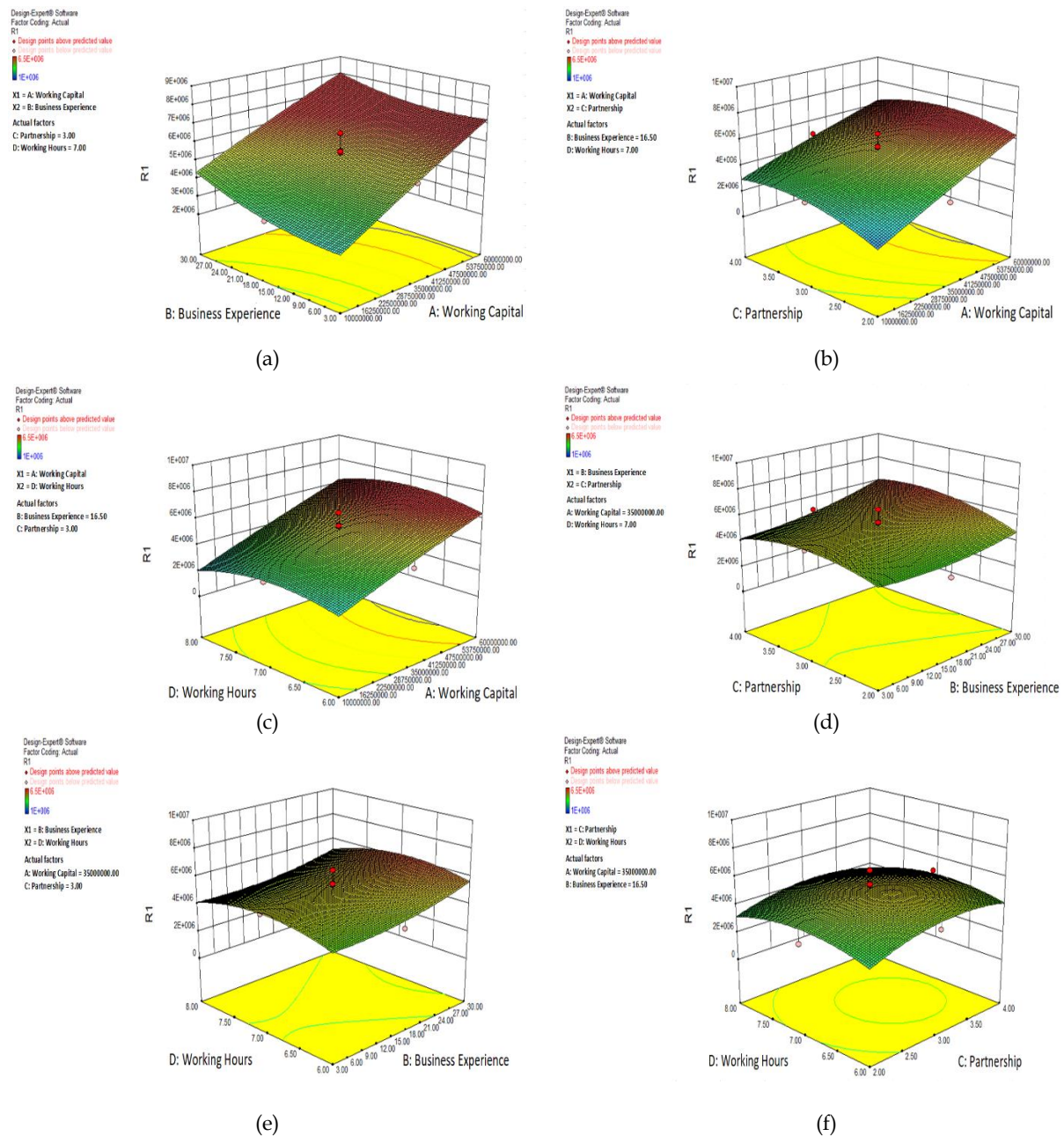

Figure 1. Three-dimensional curve surface

Table 4. Conditions for the optimum point factor

No.	Working Capital	Business Experience	Working Hours	Partnership	Income	Desirability	
1	12,069,541.74	18.93	7.99	2.01	939,074	1.00	Selected

The model incorporates quadratic coefficients—X_1^2, X_2^2, X_3^2, and X_4^2—that represent nonlinear relationships between each variable and income, indicating the presence of optimal values. The negative coefficients for X_1^2, X_3^2, and X_4^2 suggest that working capital (X_1), partnership (X_3), and working hours (X_4) have maximum points, beyond which further increases result in a decline in income (Y). Conversely, the positive coefficient for X_2^2 indicates a parabolic curve that opens upward, signifying continuous income growth with increasing business experience (X_2) up to a certain threshold.

The dynamic interplay between working capital, business experience, partnership, and working hours, and their influence on craftsmen's income, is visually represented through a three-dimensional curve. This curve illustrates the complex and multifaceted effects of these variables on income outcomes. Figure 1 presents a three-dimensional curve that depicts the relationships between various pairs of variables and craftsmen's income. These pairs include: (a) working capital and business experience, (b) working capital and partnership, (c) working capital and working hours, (d) business experience and partnership, (e) business experience and working hours, and (f) partnership and working hours.

The curve highlights optimal income regions in red, providing a visual representation of income maximization across three coordinate segments. The coefficients of each variable are transformed into matrix form using the second-order model equation. Through matrix multiplication and inversion, this process identifies the optimal points (Myers et al., 2009). The second-order model analysis determines the optimal values for working capital, business experience, partnership, and working hours, with the results presented in Table 4.

Table 4 reveals the optimal points for the factors influencing craftsmen's income. The optimal working capital is Rp 12,069,541.74, while the optimal business experience is 18.93 years. The ideal working hours are 7.99 hours per day, and the optimal partnership duration is 2 years. These values correspond to an income of Rp 939,074 for craftsmen. Typically, craftsmen invest between Rp 10,000,000 and Rp 65,000,000 in their businesses. The optimal working capital of Rp 12,069,541.74 exceeds the average income, suggesting that the capital is not immediately depleted. Long-term assets, such as *alat tenun bukan mesin* (non-mechanical looms), remain operational, while raw materials like yarn and dyes can last for several months.

The significance value of 0.0001, as shown in Table 2, is below the 0.05 threshold, confirming that working capital (X_1) significantly affects craftsmen's income (Y). However, factors such as reduced purchasing power have led to a decline in income, particularly during the pandemic. Many craftsmen reduced their production of woven fabric due to concerns about unsold inventory. Field surveys indicate that most craftsmen, especially in Griya Tuan Kentang, rely on their own capital, with only two individuals opting for bank loans. Many prefer to use personal funds to avoid monthly installments and the complexities of collateral requirements. Previous studies, such as those by Rafidah (2019), Han and Mei (2018), and Keiku et al. (2020), have demonstrated a significant positive correlation between working capital and revenue. Similarly, Eseyin et al. (2021) identified sociodemographic and financial variables as key determinants of business working capital. However, Mahmud and Aras (2020) found no significant effect of business capital on the income of stone placemat craftsmen.

The significance value for business experience (X_2) is 0.0021, which is below the 0.05 threshold, indicating a significant effect on craftsmen's income (Y). The range of experience among craftsmen in Griya Tuan Kentang spans from 3 to 30 years, with knowledge often passed down through generations. Most residents specialize in producing Palembang's traditional woven fabrics, which serve as their primary source of income. Optimal outcomes are achieved with 18.93 years of experience, as this level of expertise enhances understanding of consumer behavior, fosters innovation, and provides a competitive edge. Business experience also influences the quality and quantity of resources available, which are essential for innovation (Ceptureanu et al., 2021). Continuous innovation is crucial for maintaining competitiveness in the woven fabric market. Experienced craftsmen improve their weaving skills and knowledge, which significantly impacts their income (Beriso, 2021; Dewi & Saskara, 2020; Wannakrairoj, 2013; Widiana & Wenagama, 2019). However, Kadim et al. (2017) found no significant relationship between business experience and craftsmen's income.

The partnership variable also significantly affects craftsmen's income, as indicated by a significance

value of 0.0450 in Table 2. Established in 2017, Kube Griya Tuan Kentang serves as a hub for the fabrics produced by its member craftsmen. This initiative was designed to empower the Tuan Kentang community and its members. During the COVID-19 pandemic, Griya Tuan Kentang played a crucial role in helping craftsmen sustain their livelihoods. Currently, a consignment system between Griya Tuan Kentang and the craftsmen ensures mutual benefits and expanded market reach. The duration of craftsmen's involvement with Griya Tuan Kentang ranges from 2 to 4 years. Computational findings suggest that craftsmen achieve optimal income generation after two years of partnership, making this the ideal duration. This finding aligns with research by Hamyana et al. (2021), Fachrysa Halik et al. (2020), and Romadhona et al. (2022), which highlight the positive impact of partnerships on operating income. However, Sopiana and Endang (2020) reported no significant effect of partnerships on the revenue of potato farming businesses.

The significance value for the working hours variable is 0.4134, which exceeds the 0.05 threshold, indicating that working hours do not directly influence craftsmen's income. However, working hours may still affect income when interacting with other significant variables in the model. The ideal number of daily working hours is 7.99, at which craftsmen's revenue is maximized. These hours reflect the time spent producing woven fabrics, where increased working hours can lead to higher production and income. Studies by Sasmita and Ayuningsasi (2017) and Sari and Andika (2020) found that the number of hours worked affects income. By contrast, Yustie and Retnowati (2020) and Husaini and Fadhlani (2017) reported no significant relationship between income and longer working hours.

Field surveys reveal that not all family members contribute financially, with the primary household income coming from the head of the family, who is typically a male craftsman. Approximately 90% of the woven fabric craftsmen in the Griya Tuan Kentang group are male heads of households. Interviews indicate that wives primarily handle domestic responsibilities and assist in fabric production, often without remuneration. The income generated supports both the food and non-food needs of their families.

The continuation of craftsmen's businesses is supported by the marketing efforts of the Griya Tuan Kentang business group. In collaboration with Bank Indonesia, the Palembang City government established Griya Tuan Kentang, with funding provided by the Bank Indonesia Entrepreneurial Development Program for South Sumatra. Additionally, institutions such as the Sriwijaya State Polytechnic contribute to improving production quality, quantity, and innovation through community service activities. As a result, the village of Tuan Kentang has become a prominent shopping destination for Palembang woven fabric crafts.

5. CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

This study successfully identified the optimal combination of variables—working capital (X_1), business experience (X_2), partnership (X_3), and working hours (X_4)—that maximizes income for traditional woven fabric craftsmen. Specifically, the ideal combination for income maximization includes Rp 12,069,541.74 in working capital, 18.9 years of business experience, a 2-year partnership duration, and 7.99 working hours per day. While working capital (X_1), business experience (X_2), and partnership (X_3) were found to significantly influence craftsmen's income (Y), working hours (X_4) did not have a direct effect. However, working hours were included in the Response Surface Methodology (RSM) model due to their potential indirect impact on income through interactions with other variables.

The findings of this study offer practical insights for traditional woven fabric craftsmen seeking to optimize their earnings. By adopting the identified optimal combination of factors, craftsmen can enhance efficiency, improve productivity, achieve greater financial independence, and increase the competitiveness of their products. These improvements can ultimately contribute to a higher standard of living. For local governments, the study provides a foundation for designing economic empowerment programs tailored to the needs of craftsmen, such as capital assistance initiatives or targeted training programs.

Despite its contributions, this study has certain limitations. Future research could incorporate additional variables, such as the number of workers, raw material prices, and the availability of raw materials, to provide a more comprehensive analysis. Furthermore, expanding the scope of the study to include a larger sample of traditional Palembang woven fabric craftsmen would offer a broader and more representative perspective on the industry.

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